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NOTE ON THE EVIDENCE OF A PERMANENT SOUTHWARD FLOW OF UPPER OCEANIC TROPOSPHERIC WATERS OFF ANGOLA AT 12° S

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In order to investigate seasonal variations in the general oceanographic conditions off Angola, the R/V "GOA" undertook four cruises along the parallel at 12° S, over the continental shelf to 9° E longitude, covering about 500 km, between September 1970 and July 1971. Temperatures, salinities, dissolved oxigen, and inorganic phosphates and silicates were sampled at standard depths to a maximum of 1 000 m. The results of the dynamic calculations are represented in Table 1 and Figures 1-4.

Geostrophic speeds were calculated using the 800-db surface as a reference level after examination of the differences in the relative dynamic depth of given isobaric surfaces between adjacent oceanographic stations (Defant 1961). The dynamic heights corresponding to depths above the reference level were reduced according to the Helland-Hansen method by using specific volume anomalies extrapolated along the bottom (Fomin 1964). The accuracy of the salinity values determined using an inductive salinometre was estimated to be ± 0,005 ‰ and the accuracy of temperature values (averages of paired thermometers) better than ± 0,02 °C. The effect of measurement error on the determination of dynamic height anomalies was estimated to be less than 0,01 dyn m (Wooster and Taft 1958).

Geostrophic speeds represented in Figures 1-4 reveal a permanent flow running south near the coast, with greater speeds over the upper part of the continental slope and in the top 100 m. The speed of the southward flow of the current appears to attain its maximum value, on the order of 1 knot, at the surface at a distance of 100 km from the coast in March. Table 1 shows that the volume transport above 400 m relative to the 800-db level across the observed profile was in a southward direction during the period of observation.

REFERENCES

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WOOSTER, W. and B. TAFT 1958 - On the reliability of field measurements of temperature and salinity in the ocean. J. Marine Res. 17: 552-566.

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TABLE 1. Volume transport (10^6 m^3/s) above 400 m relative to the 800-db level across the profile at 12° S, 9° E, between standard stations at a depth of 500 m. (Minus values indicate southward flow)

Observation data	Volume transport
17th-19th September 1970	-3,7
17th-19th November 1970	-2,0
1st-3rd March 1971	-2,6
17th-19th July 1971	-1,2

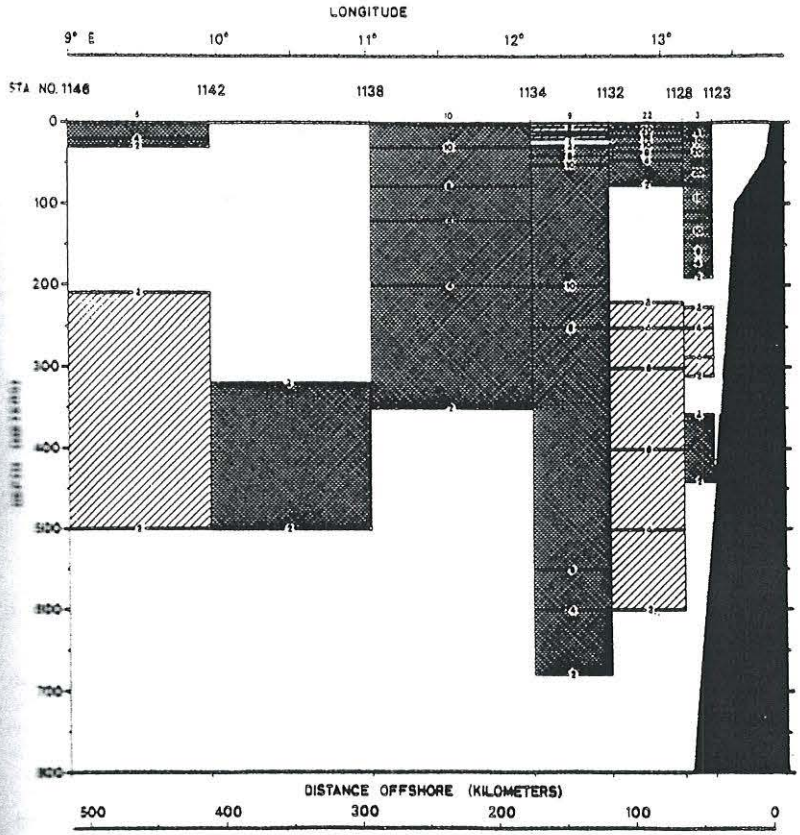
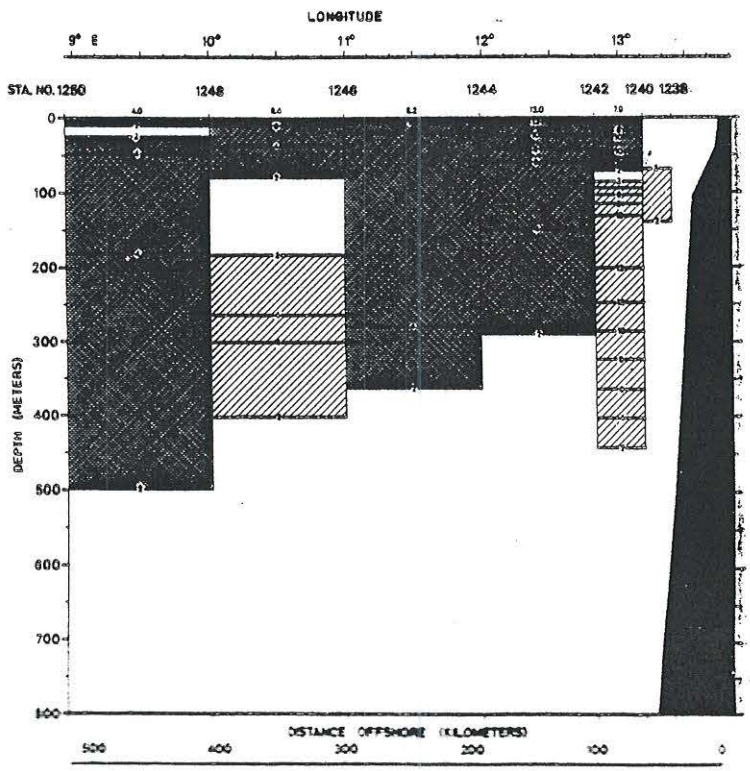


FIG. 1. 17th–19th September 1970: Geostrophic speed (cm/s relative to the 800-decibar surface) perpendicular to the profile at 12° S (light shading represents northward flow, dark shading southward flow)



2. 17th–19th November 1970: Geostrophic speed (cm/s relative to the 800-decibar surface) perpendicular to the profile at 12° S (light shading represents northward flow, dark shading southward flow)

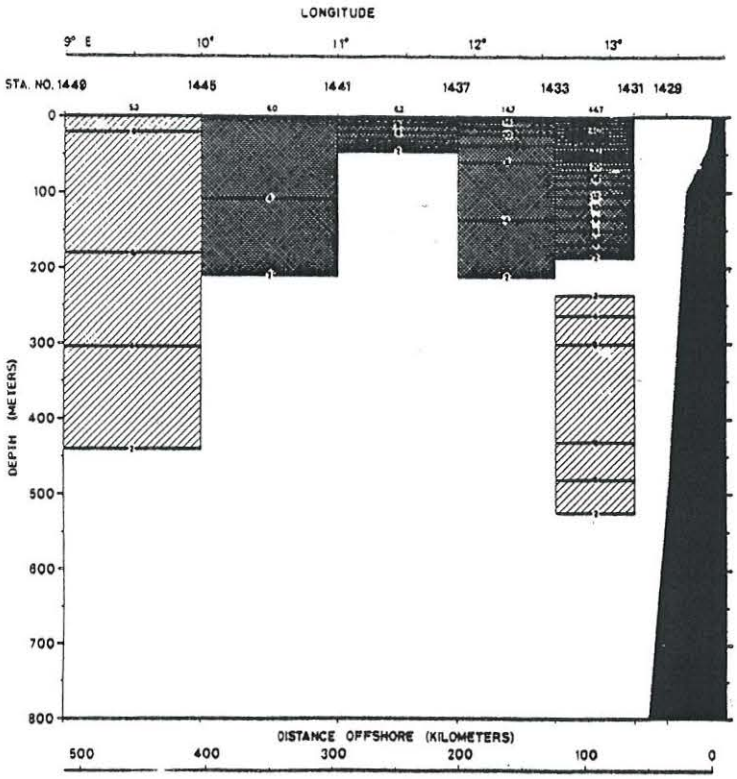


FIG. 3. 1st-3rd March 1971: Geostrophic speed (cm/s relative to the 800-decibar surface) perpendicular to the profile at 12° S (light shading represents northward flow, dark shading southward flow)

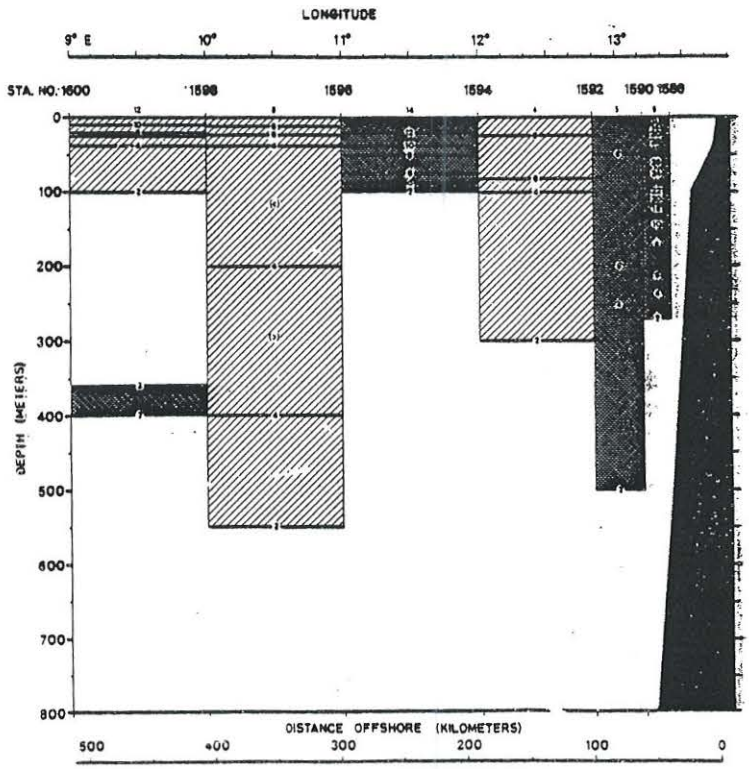


FIG. 4. 17th-19th July 1971: Geostrophic speed (cm/s relative to the 800-decibar surface) perpendicular to the profile at 12° S (light shading represents northward flow, dark shading southward flow)